

Leo Yu-Heng Xie

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SKILLS SUMMARY

- Leadership
- Mechanical and electrical skills and knowledge
- Coding experience since 2017
- 3 years of summer job work experience
- Numerous robotics competition experiences, including VRC & FIRST since 2018
- Self motivated and fast learner

PROJECTS

Vex Robotics Competition Robot | X-drive chassis with odometry algorithm Jan. - Feb. 2021

- Designed and built special X-drive for custom irregular robot movements
- Implemented advanced optical sensor system for color and object distance detection
- Applied vision systems sensor for object tracking and following
- Built tracking encoders for odometry, gyro and inertial sensors for heading correction

Hidden | Pen-shaped device to destroy inked QR/bar code Sep. 2020 - Feb. 2021

- Created a device to destroy inked codes on shipping labels to protect private information using special thermal tips
- Designed with a main control system using ARM Cortex M0 & current control system
- Implemented a temperature control system using thermal fuse, temperature sensors and smart chips
- 3-D Printed design of the device exterior shell

Dual Rehabilitation Robot | Upper and lower limb recovery robot Apr. 2020 - Present

- Implemented a market ready rehabilitation robot as a developer assistant of mechanical improvements for Dr. Robot Inc. along with University of Western Ontario & CSTAR

Portella | Knee joint rehabilitation equipment Aug. 2019 - Feb. 2020

- Utilized EMG technology to detect muscle-nerve signals that direct electrical motor movement along with AI programming algorithms
- Improved the effectiveness and intensity of rehab treatment after knee joint replacement surgery

Cleaner robot | The practical solution of the geese excrement Jan. - Apr. 2018

- Created a cleaner robot to detect and dispose of geese excrement within local community
- Implemented distance sensors, and camera vision with Raspberry Pi

LEADERSHIP EXPERIENCES

Club Founder, LeRoi Robotics Vex Robotics Competition Team 81208X Jun. 2018 - Present

- Managed the whole process of the club, including recruitment, designing and building the robot, programming, outreaching, and arranging competitions annually
- Oversaw the editing of engineering notes prepared for each competition
- Mentored rookie teams throughout the community

Club Director, St. Robert CHS Robotics Club Sep. 2020 - Present

- Managed the club's routines, taught the competition game rules, led the design and build of the robot, mentored programming and engineering notes process, and conducted the entire outreach process
- Led the team as Team Captain to win Inspire Award at the 2020 FTC Ontario Championship

Executive Member, St. Roberts Robotics Club Sep. 2018 - July 2019

- Led programming sub-team, and oversaw design and build of competition robots
- Mentored new club members

Executive Member, and **Current Written Cluster Trainer**, St. Robert CHS DECA Club

Sep. 2019 - Present

- Trained and prepared the entire written cluster to compete at the 2021 DECA Ontario Championships

Executive Member, St. Robert CHS STEM Council

Sep. 2020 - Present

- Prepared materials for promotion
- Discussed with various school clubs and councils for collaboration events

PROGRAMMING SKILLS

- Python, Java, C++, C#
- JavaScript, HTML, and CSS for web development
- TensorFlow for machine learning and OpenCV for vision
- GitHub, basic networking
- Adobe Photoshop and Premier, VSDC Editor
- Arduino and Raspberry Pi
- Creo, Inventor, AutoCAD for CAD software

AWARDS AND CERTIFICATES

2021

Team:

- Led 81208X to win Skills Champion at the Maple Leaf tournament, ranked 1st place in Canada, 1st globally as of Feb. 2021

2020

Personal:

- DECA Provincial Champion for Innovation Business Plan, qualified to the 2020 DECA World ICDC Championships (cancelled due to COVID-19)
- Certificate of Distinction for the 2020 CSMC Math Contest
- Global Finalist for the Vex Annotated Programming Skills Video Submission
- SHAD 2020 Alumni

Team:

- Led 81208X to win the Provincial Create Award at the 2020 Vex Ontario Provincial Championships, qualified to the 2020 VEX World Championships
- Led FIRST Tech Challenge team 16488 from St. Robert CHS to win the Inspire Award at the 2020 FTC Ontario Championships, qualified the team to the 2020 FTC World Championships

2019

Team:

- Led the Robotics Team from St. Robert CHS representing York Catholic DSB, competed at the Ontario Skills Challenge, ranked 2nd programming, 5th ranked overall
- Led VRC team 81208X to win the Judges Award at the St. Michaels Regional, qualified to compete at the VEX Ontario Provincial Championships

2018

Personal:

- Silver Award at the 2018 York Region Science and Technology Fair
- First Place video production in the *Many Face of Markham* Art Contest

Team:

- Founder and captain of VEX Robotics Competition team 81208X LeRoi Robotics, led team to win the Excellence Award at the Toronto Regional

WORK EXPERIENCE

Developer Assistant, Dr. Robot Inc.

Apr. 2020 - Present

- Provided suggestions on mechanical improvement
- Enhanced the mechanism's build quality

Counsellor, STEAM Program for Youth

Jul. - Sep. 2020

- Edited the curriculum and hosted demos
- Worked as Instructor Assistant throughout the lessons and work periods
- Assessed the performance of the students

Assistant, STEAM Program for Youth

Jun - Sep. 2019

- Hosted workshops to teach robotics building and programming skill
- Arranged robotic competitions

- Organized outreach activities and assisted in marketing aspects

Teaching Assistant, Dr. X Academy

Jun. - Sep. 2018

- Taught fundamentals of robotics design and building skill
- Created presentation material and managed entire teaching procedure
- Provided mentorship to students who were additionally interested in STEM

ACTIVITIES & INTERESTS

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| - Varsity Tennis Team of ST. Robert CHS | Sep. 2017 - Nov. 2017 |
| - Alpine Skiing/Night Fly Skiing Club of St. Robert CHS | Sep. 2017 - Jun. 2019 |
| - Piano RCM Level 10 | Aug. 2019 |
| - Alto Saxophone RCM Level 5 | Nov. 2019 |